Red Wine Polyphenols Affect the Collagen Composition in the Aorta after Oxidative Damage Induced by Chronic Administration of CCl4

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Résumé en anglais	Increased amount of collagen type I and decreased amount of type III is described in various pathological processes in the vascular wall. Polyphenols were shown to have protective effect on endothelium, decrease blood pressure and prevent oxidative damage induced by various stimuli. Tetrachlormethane (CCl4) is a toxic substance with known negative systemic effects induced by free radicals. Chronic administration of CCl4 for 12 weeks led to an increase of collagen type I and a decrease of type III in the wall of aorta. Parallel administration of red wine polyphenolssignificantly reduced the increase of collagen type I, at the same time the content of type III rose to the level above controls. After 4 weeks of spontaneous recovery no changes were observed. If polyphenols were administered during the recovery period, there was a decrease of type I and an increase of type III collagen content in the aorta. It can be concluded that polyphenols have a tendency to lower the amount of type I and to increase the proportion of type III collagen in the wall of the aorta. These changes are significant in prevention or in regression of changes induced by chronic oxidative stress. This effect of polyphenols is most likely the result of their influence on MMP-1 and TIMP activities through which they positively influence the collagen types I and III content ratio in the vascular wall in favor of the type III collagen.
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